CITY OF FRESNO WATER DIVISION LEAD AND COPPER RULE COMPLIANCE MONITORING RESULTS OF SUMMER 2006 MONITORING

INTRODUCTION

The United States Environmental Protection Agency (USEPA) promulgated National Primary Drinking Water Regulations for lead and copper monitoring on June 7, 1991, (56FR26460) commonly referred to as the Lead and Copper Rule. This Rule requires that the City of Fresno monitor the Water distribution system from the source to the point of delivery at the consumer's tap. Three specific monitoring protocols are included in the Lead and Copper Rule regulations:

1) first draw tap water monitoring for lead and copper
2) distribution system monitoring for various water quality parameters, and
3) source water monitoring for lead, copper, and various water quality parameters.

For purposes of the Lead and Copper Rule monitoring requirements, the City of Fresno is classified as a large public water supplier. This classification is based upon the City's 124,000 service connections which supply potable water to some 510,000 customers.

SAMPLE SITE SELECTIONS

The City of Fresno utilized the same Tier 1-C sample pool of 131 original residences which were selected for the initial two years of testing. Two rounds of sampling and analysis for lead and copper were required for 1993 whereas only one round was required for 1994. Eighteen of the residences were not sampled for 1994; two residents had

installed water filtration/softening devices, seven residents could not be contacted, and nine chose not to participate in this sampling. One resident had moved into an adjacent dwelling which met all the criteria for sample site and was thus added to the sample pool. Samples were thus collected for 114 sites in the sample 1994 pool. Per direction of the State of California Department of Health Services, Office of Drinking Water (who presently govern the Lead and Copper Rule) the 1996, 1999, 2003, and 2006 sampling were reduced to fifty (50) representative sites from within the original sample pool of residences. Sites were randomly selected from each tract in an attempt to maintain equal sample percentages in accordance with previous sampling. Unfortunately not all sites selected for the 2006 sampling chose to participate. The final tract percentages are outlined below:

TRACT	ENTIRE POOL %	1996%	1999%	2003%	2006%
A	03%	08%	06%	06%	06%
B	34%	30%	32%	30%	35%
C	31%	30%	24%	30%	31%
D	18%	18%	18%	16%	16%
E	12%	14%	18%	16%	12%
F	02%	00%	02%	02%	00%
TOTAL	100%	100%	100%	100%	100%

Exhibit 1 presents the completed Sample Site Justification/Collection method Certification Form from the Lead and Copper Rule guidance Manual. The residents

performing the tap water sampling are listed in Table 1. Water Quality sampling was performed at seventeen (17) source locations and fifteen (15) distribution system locations. These water quality sample locations are in the same areas as the tap water sample sites and represent the sources and distribution system for all the tap water sample sites in the 2006 Tier 1-C sample pool. The locations of the water quality sample sites are listed in Table 2.

SAMPLE COLLECTION

The City of Fresno collected their 2006 samples in compliance with the Lead and Copper Rule during the period June 23 – August 5, 2006 (86% during collected by June 29th). Residents collecting tap water samples were given written instructions (Exhibit 2) along with their sample bottle.

TAP WATER SAMPLE RESULTS

Table 3 presents the results of the tap water analysis for lead and copper. The table lists the lead and copper concentrations in descending order. This was done in order to determine the 90th percentile levels as required by the Lead and Copper Rule.

Lead Results

The 90th percentile lead level was determined by multiplying the number of samples taken by 0.9 (51 x 0.9 = 46). The 90th percentile lead level for the City of Fresno sample is ND (non-detect) which is below the EPA action level of 0.015 mg/L. The laboratory analysis detection limit for lead is the following: values less that 0.001 mg/L are reported

as ND; values between 0.0010 and 0.0049 are reported as 0.0025 mg/L; values greater than 0.005 mg/L are reported directly.

Copper Results

The 90th percentile copper level was determined in the same way as for lead. The 90th percentile copper level for the City of Fresno is 0.13 mg/L which is below the EPA action level of 1.3mg/L. The laboratory analysis detection limit for copper is the following: values less than 0.01 mg/L are reported as ND; values between 0.010 and 0.049 mg/L are reported as 0.025 mg/L; values greater that 0.05 mg/L are reported directly.

DISTRIBUTION SYSTEM AND SOURCE SAMPLE RESULTS

Water quality analysis was performed on fifteen (15) distribution system locations and seventeen (17) points of entry to the distribution system. These results are summarized in Table 2. Both the lead and copper concentrations of the source water and distribution system at these sample locations are significantly below the EPA/DHS action level. The laboratory analysis detection limit for both lead and copper has been previously explained.

FUTURE LEAD AND COPPER MONITORING

Upon completion of this sixth year of sampling for the Lead and Copper Rule, the City of Fresno's water distribution system continues to be significantly below the EPA/DHS action level. Accordingly, it is interpreted that the next round of testing be resumed in the summer of 2009 to monitor lead and copper for the EPA/DHS.

TABLE 3

TAP WATER SAMPLE ANALYSIS (LEAD)—SUMMER 2006

#	Rank	mg/l	#	Rank	mg/l	#	Rank	mg/l
88	51	0.0025	36	34	ND	21	17	ND
03	50	0.0025	57	33	ND	80	16	ND
147	49	0.0025	109	32	ND	10	15	ND
159	48	0.0025	84	31	ND	51	14	ND
42	47	0.0025	76	30	ND	145	13	ND
149	46	ND	115	29	ND	136	12	ND
102	45	ND	92	28	ND	157	11	ND
165	44	ND	01	27	ND	140	10	ND
63	43	ND	02	26	ND	130	9	ND
52	42	ND	120	25	ND	143	8	ND
86	41	ND	40	24	ND	168	7	ND
98	40	ND	20	23	ND	134	6	ND
89	39	ND	26	22	ND	156	5	ND
58	38	ND	79	21	ND	164	4	ND
71	37	ND	129	20	ND	131	3	ND
111	36	ND	153	19	ND	148	2	ND
105	35	ND	176	18	ND	139	1	ND

TABLE 3

TAP WATER SAMPLE ANALYSIS (COPPER)—SUMMER 2006

#	Rank	mg/l	#	Rank	mg/l	#	Rank	mg/l
42	51	O.32	51	34	0.087	176	17	0.025
26	50	0.29	40	33	0.080	21	16	0.025
92	49	0.27	03	32	0.075	10	15	0.025
120	48	0.26	80	31	0.072	136	14	0.025
79	47	0.19	58	30	0.065	140	13	0.025
84	46	0.13	159	29	0.065	143	12	0.025
109	45	0.12	102	28	0.063	156	11	0.025
86	44	0.12	115	27	0.050	164	10	0.025
63	43	0.12	98	26	0.025	148	9	0.025
01	42	0.12	71	25	0.025	139	8	0.025
02	41	0.12	105	24	0.025	149	7	0.025
76	40	0.11	57	23	0.025	145	6	ND
89	39	0.10	88	22	0.025	157	5	ND
111	38	0.10	20	21	0.025	130	4	ND
36	37	0.096	129	20	0.025	168	3	ND
52	36	0.096	153	19	0.025	134	2	ND
165	35	0.092	147	18	0.025	131	1	ND

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

STATE FORM 141-R LEAD AND COPPER MONITORING SUMMARY

CHANGE OF SAMPLING SITES

Type	"System ID#	Location	Justification
Source	1010007-607	(b) (6) [redacted]	Proximity to area served

APPENDIX A

INSTRUCTIONS AND RESIDENT CHAIN OF CUSTODY

APPENDIX B

DISTRIBUTION SYSTEM RESULTS

APPENDIX C

SOURCE WATER RESULTS

APPENDIX D

RESIDENT SAMPLE SITE RESULTS

APPENDIX E

CHAIN OF CUSTODY

TABLE 1

TAP WATER SAMPLE ANALYSIS MASTER LISTING

TABLE 2

WATER QUALITY PARAMETER SAMPLE LOCATIONS AND RESULTS

TABLE 2

WATER QUALITY PARAMETER SAMPLE LOCATIONS AND RESULTS

Type	System ID#	Location	Copper mg/l	Lead mg/l
Source	W-6B	(b) (6) (b) (9)	ND	ND
Source	W-79		ND	ND
Source	W-83A		ND	ND
Source	W-86		ND	ND
Source	W-89		Not in service	Not in service
Source	W-91		ND	ND
Source	W-97		ND	ND
Source	W-99		Not in service	Not in service
Source	W-131		ND	ND
Source	W-133		Not in service	Not in service
Source	W-136		ND	ND
Source	W-141		ND	ND
Source	W-143		ND	ND
Source	W-150		ND	ND
Source	W-163		ND	ND
Source	W-169		ND	ND
Source	W-171		ND	ND
Source	W-178		ND	ND
Source	W-181		ND	ND
Source	1010007-607		ND	ND

TABLE 2

WATER QUALITY PARAMETER SAMPLE LOCATIONS AND RESULTS

Type	System ID#	Location	Copper mg/l	Lead mg/l
Dist	E3A19	(b) (6)	ND	0.0025
Dist	E3B44		ND	ND
Dist	E4B45		ND	ND
Dist	E4B47		ND	ND
Dist	E3D93		ND	ND
Dist	E4A22		ND	ND
Dist	E7A14		ND	0.0025
Dist	E7D91		ND	0.0025
Dist	E8D48		ND	ND
Dist	W2A11		0.18	0.0025
Dist	W2A13		ND	ND
Dist	W2C43		0.025	0.0025
Dist	W2D54		ND	0.0025
Dist	W5D52		ND	ND
Dist	W5D58		0.025	0.069

TABLE 3

TAP WATER SAMPLE ANALYSIS SUMMER 2006

TABLE 3

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79	47	0.19	58	30	0.065	140	13	0.025
84	46	0.13	159	29	0.065	143	12	0.025
109	45	0.12	102	28	0.063	156	11	0.025
86	44	0.12	115	27	0.050	164	10	0.025
63	43	0.12	98	26	0.025	148	9	0.025
01	42	0.12	71	25	0.025	139	8	0.025
02	41	0.12	105	24	0.025	149	7	0.025
76	40	0.11	57	23	0.025	145	6	ND
89	39	0.10	88	22	0.025	157	5	ND
111	38	0.10	20	21	0.025	130	4	ND
36	37	0.096	129	20	0.025	168	3	ND
52	36	0.096	153	19	0.025	134	2	ND
165	35	0.092	147	18	0.025	131	1	ND

EXHIBIT 1

SAMPLE SITE JUSTIFICATION/COLLECTION METHOD CERTIFICATION

LEAD AND COPPER RULE SAMPLING REPORT

System's Name City of Fresno

Address:
1910 E. University Ave
Fresno, CA 93703-2988

Telephone Number (559) 621-5300

System ID Number: 10-007

Contact Person: Garth Gaddy

Type: ☒ CWS ☐ NTNCWS

Size: ☒ >100,000
☐ 50,001 to 100,000
☐ 10,001 to 50,000
☐ 3,301 to 10,000
☐ 501 to 3,300
☐ 101 to 500
☐ ≤ 100

Sample Date(s): 6/23/06 – 8/05/06

SAMPLE SITE IDENTIFICATION

Number of sample sites in each category:

• Single-family structures with copper pipes with lead solder installed after 1982; or lead pipes; or lead service lines.	130
• Multi-family structures with copper pipes with lead solder installed after 1982; or lead pipes; or lead service lines.	01
• Buildings containing copper pipes with lead solder installed after 1982; or lead pipes; or lead service lines.	00
• Single family structures with copper pipes with lead solder installed before 1983.	00
Total:	131

Number of lead service lines present in the distribution system: 00

Number of samples collected from sites served by lead service lines: 00

The following sources have been explored to determine the number of structures which have interior lead pipe or copper pipe with lead solder:

- ☒ Plumbing and/or building codes.
- ☒ Plumbing and/or building permits.
- ☒ Contacts with the building department, municipal clerk's office, or state regulatory agencies.
- ☒ Water quality data.
- ☒ Interviews with building inspectors
- ☒ Survey of service area plumbers about when and where lead solder was used from 1982 to present.
- ☒ Survey of residents.
- ☒ Interviews with local contractors & developers.

The following sources have been explored to determine the number of lead service lines in the distribution system:

- ☒ Distribution system maps and record drawings.
- ☒ Capitol improvement plans and/or master plans for distribution system development.
- ☒ Standard operating procedures and/or operation & maintenance manuals for the types of materials used for service connections.
- ☒ Utility records including meter installations, customer complaint investigations .
- ☒ Water quality data.
- ☒ Interviews with senior personnel.
- ☒ Conduct service line sampling where lead service lines are suspected to exist.
- ☒ Review of permit files
- ☒ Survey of residents.
- ☒ Interviews with local pipe supplies, contractors and/or developers.

RESULTS OF SAMPLING

Results of Lead And Copper Tap Water Samples: (*Attach copy of all results to this form.*)

Number of tap samples required: 50

Number of tap samples collected & submitted: 51

90th Percentile Lead level: nd_mg/L

90th Percentile Copper level 0.13mg/L

Results of Water Quality Parameter (WQP) Samples: (*Complete only if system is required to collect WQP samples.*)

Number of WQP samples required to be collected: 15

Number of WQP samples collected & submitted: 15

Number of WQP entry point samples required to be collected: 17

Number of WQP entry point samples collected and submitted 17

CERTIFICATION OF COLLECTION METHODS

I certify that:

- Each first draw tap sample for lead and copper is one liter in volume and has stood motionless in plumbing system of each sampling site for at least six hours.
- Each first draw sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.
- Each first draw sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.
- Each first draw sample collected during an annual or triennial monitoring period has been collected in months of June, July, August, or September.
- Each resident who volunteered to collect tap water samples from his or her home has been properly instructed in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results.
- Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents who performed sampling.

CHANGE OF SAMPLING SITES

Original site address: See Attached

New site address: See Attached

Distance between sites (approximately): Less than ½ mile

Targeting Criteria:	New Site:		Old Site:	
Area Served	Area Served	☐ Tier 1	Area Served	☐ Tier 1
		☐ Tier 2		☐ Tier 2
		☐ Tier 3		☐ Tier 3

Reason for sample site change:

Proximity to area served.

SIGNATURE: _____ **DATE:** _____

Print Name Garth Gaddy

Title Interim Water System Manager

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

STATE FORM 141-R LEAD AND COPPER MONITORING SUMMARY

CHANGE OF SAMPLING SITES

Type	"System ID#	Location	Justification
Source	1010007-607	(b) (6) [redacted]	Proximity to area served

EXHIBIT 2

RESIDENT TAP SAMPLE COLLECTION DIRECTIONS & PROCEDURES

DIRECTIONS--RESIDENT TAP SAMPLE COLLECTION PROCEDURES

These samples are being collected to determine the contribution of household fixtures and pipes and/or solder to the lead and copper levels in tap water. This sampling effort is required by the State of California, Department of Health Services, and is being accomplished through the cooperation of homeowners and residents. The collection procedure is described in detail below:

1. **On the day prior to collecting the sample thoroughly clean and remove all debris which may have accumulated inside the aerator of your kitchen tap water faucet. Run the tap for 1-2 minutes after cleaning so that no loose debris will impact sampling process.**

2. **Do not use any water for 6-8 hours on your premises prior to sampling.** The Water Division recommends that either early mornings (after awakening) or early evenings (after returning from work) are the best sampling times to ensure that the proper water conditions exist.

3. **The primary kitchen cold water faucet is to be used for sampling. The sample must be 100% from the cold water side of the tap; it can not be a mixture of water "dialed"from both hot and cold service lines.** Place the open sample bottle below the faucet and **gently** open the cold water tap. **Slowly fill the sample bottle** to the base of the neck and turn off the water. **It should take 45-60 seconds to fill the sample bottle.**

4. Tightly cap the sample bottle and place in the plastic bag provided. Complete the information requested below and place this paper in the plastic bag with the sample bottle.

5. **Place the sample outside your home for pick-up Monday, June 26th by 8:00 AM.**

6. Results from this monitoring effort will be provided to participating customers when reports are generated for the State of California, Department of Health Services.

Please call Bill Dunn at 621-5365 if you have any questions regarding these instructions. Saturday & Sunday 6/24 & 6/25, telephone calls will be monitored hourly 7AM-7PM!!

TO BE COMPLETED BY RESIDENT AND RETURNED WITH SAMPLE:

Water was last used: TIME_____ DATE_____
Sample was collected: TIME_____ DATE_____

I have read the above directions and have taken a tap sample in accordance with these directions.

PRINTED NAME_____ SIGNATURE_____
ADDRESS_____ PHONE_____

TO BE COMPLETED BY WATER DIVISION EMPLOYEE:

Sample picked up by_____Time_____Date_____

xxxxxxxxxxxxxxx
xx Label Here xx
xxxxxxxxxxxxxxx

EXHIBIT 3

TAP WATER SAMPLE ANALYSIS MASTER LISTING

EXHIBIT 4

SOURCE SAMPLE LISTING FOR ENTIRE CITY

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

(b) (9)

EXHIBIT 5

DISTRIBUTION SAMPLE LISTING FOR ENTIRE CITY